A New Species of *Cyclanthera* (Cucurbitaceae) from Alajuela Province, Costa Rica

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ABSTRACT. *Cyclanthera lalajuela* Hammel & J. A. González, known only from the Caribbean slope of Alajuela Province, Costa Rica, is described. The combination of trifoliolate leaves with conspicuous, sessile glands at the base of the leaflets and unarmed fruits distinguish it from all other species in the genus.

RESUMEN. Se describe *Cyclanthera lalajuela* Hammel & J. A. González, conocida solamente de la vertiene caribeña de la provincia de Alajuela, Costa Rica. La combinación de hojas trifolioladas con glándulas sésiles, conspicuas en la base de las hojuelas y sus frutos inermes la distingue de todas las demás especies del género.

Key words: Alajuela, Costa Rica, Cucurbitaceae, *Cyclanthera*, IUCN Red List.

Perhaps most new species described today are ones found by specialists who have worked many years in a given group, have personally collected the species, may have even known them for many years, accumulating numerous new ones to publish in revisionary compendia. Many, however, also come to light as a result of work on country or regional floras. Since its beginning over 15 years ago, the *Manual de Plantas de Costa Rica* project has recorded over 50 species new to Costa Rica per year, more than half of them new to science (cf. Zamora et al., 2004). The rather cryptic new species of *Cyclanthera* Schrader (Cucurbitaceae, Cyclanthereae) described below was first collected in flower in 1935 by San Ramon's patron saint of botany, Alberto Brenes (1870–1948); however, no other fertile collections were made until W. Haber's fruiting specimen of 1988, near the beginning of the Manual project. Restricted to wet forests of the Caribbean slope of Alajuela Province that even now remain quite isolated, the species is still only known from six fertile collections, but is here recognized as distinct from all others in this Neotropical genus of ca. 30 species.

Cyclanthera lalajuela Hammel & J. A. González, sp. nov. TYPE: Costa Rica. Alajuela: Cantón de Tilarán, San Gerardo, Río Caño Negro, Finca de Marcos Vargas, 850 m, 12 Jan. 1989 (fl.), *Erick Bello 658* (holotype, INB; isotypes, CR, MO). Figure 1.

Species insignis foliis trifoliolatis, foliolis subintegris (elobatis sed inconspicue crenulatis vel denticulatis) glandulis conspicuis basi ornatis et fructibus laevibus a speciebus congericis nobis notis bene distincta.

Slender monoecious vine; stem nodes puberulent. Petioles 1–2.5 cm, puberulent at apex. Leaves trifoliolate, orbicular to oblate, 5–10 × 6–12 cm; leaflets markedly petiolulate, petiolules 0.5–1.5 cm, central leaflet 5–10 × 2.5–5 cm, elliptic to obovate, nearly entire (indistinctly crenate to denticulate), lateral leaflets similar, unlobed but inequilateral; both blade surfaces glabrous but ± papillose-scabrous; conspicuous glands at base of leaflets on abaxial surface, usually 1 to 13 per side, often also 1 to 3 glands near apex; tendrils bifid. Staminate inflorescences alone or co-axillary with a pistillate flower, narrowly paniculate, 3–7(–13) cm, floriferous nearly to the base; pedicels 2–3.5 mm, glabrous. Staminate flowers with the calyx tube ca. 1.5 mm wide, calyx teeth ca. 0.5 mm, triangular; corolla white, greenish white to cream, 3–4.5 mm wide, petals 5, 1–2 mm; filament column 0.2–0.3 mm, staminal disk 0.5–0.6 mm diam. Pistillate flowers solitary, co-axillary with a staminate inflorescence, peduncle 6–20 mm; ovary 2.5–5 mm, narrowly elliptic with a beak ca. 1.5 mm. Fruits with a peduncle ca. 3.5 cm, the body ca. 5.5 × 2 cm, basally gibbose, acuminate to the apex, smooth; seeds not seen.

Distribution and IUCN Red List category. This species as presently known, endemic to Alajuela Province, Costa Rica, is found only on the Caribbean slope of the Guanacaste and Tilarán mountain ranges, from 700–1200 m elevation. The species has been recorded from Arenal Volcano National Park, as well as from the San Gerardo Biological Station, so it does not seem to be in imminent danger from direct human intervention or deforestation. However, considering the apparent rarity of the species and its isolation in

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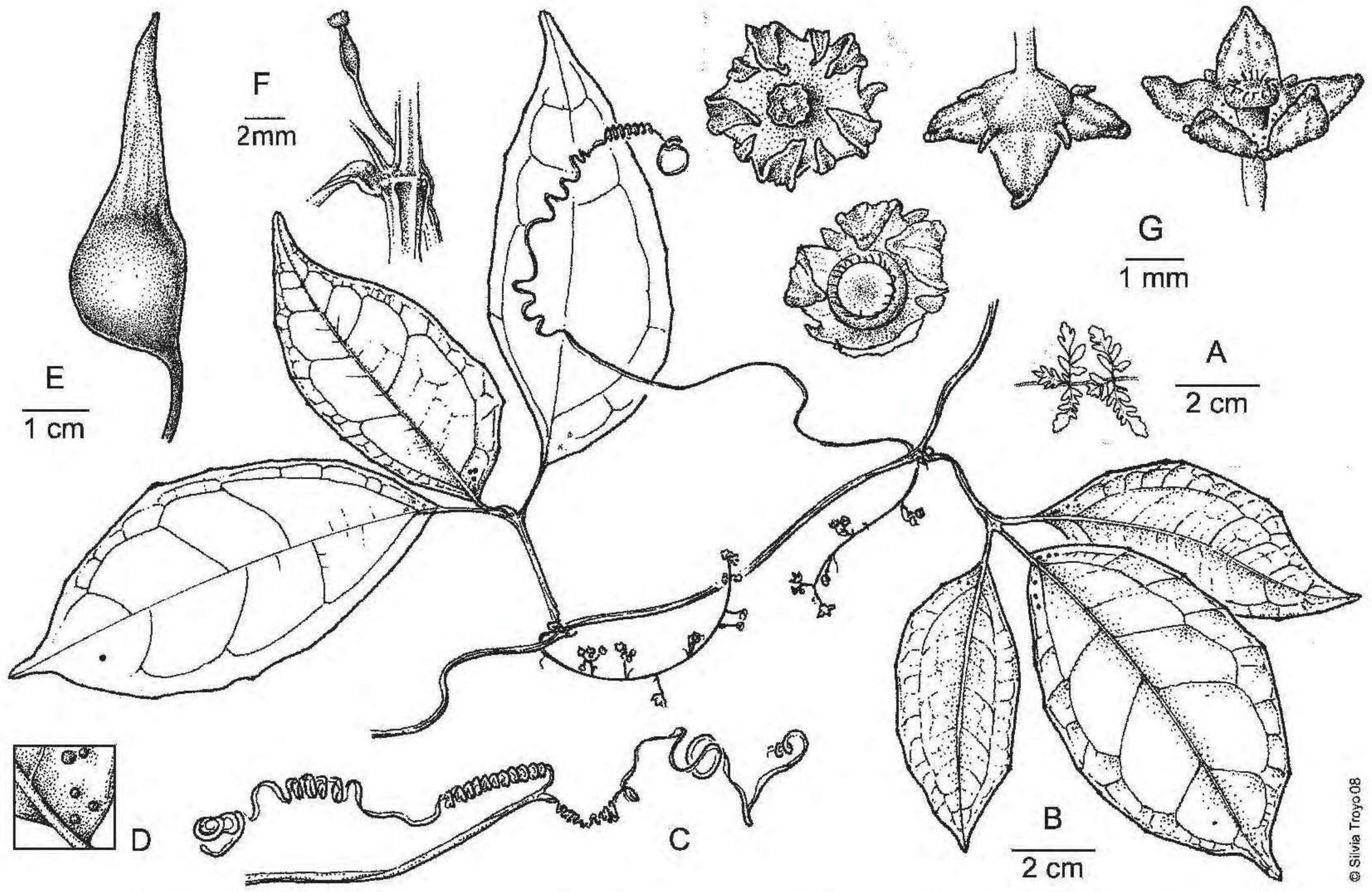

Figure 1. *Cyclanthera lalajuela* Hammel & J. A. González. —A. Juvenile leaves. —B. Habit. —C. Typical bifurcate tendril. —D. Detail of glands on base of leaflet, abaxial surface. —E. Fruit. —F. Pistillate flower. —G. Different views and stages of staminate flowers. (A, from *Austin Smith H60*, F; B–D, from *A. Rodríguez et al. 6268*, INB; E, from *Haber 8071*, CR; F, G, from the holotype, *Bello 658*, INB.)

one small region of the Caribbean, mid-elevation wet forests, it should be classified as Vulnerable (VU) according to IUCN Red List criteria (IUCN, 2001).

Etymology. Because this species was, in part, exhumed from rather old collections, we have chosen to name it by exhuming the original name of the town and now province to which it is endemic, "La Lajuela." The combined form "lalajuela" (from which the current "Alajuela" was eventually derived by dropping the initial "l") is used here simply as a noun in apposition (cf. Art. 23.1, McNeill et al., 2006) and not meant to be latinized.

Discussion. At first glance, one somewhat familiar with the Costa Rican flora might easily mistake this new species for a species of *Cissus* L. (Vitaceae) or *Cayaponia* Silva Manso (Curcurbitaceae), since all other Costa Rican species of *Cyclanthera* have either simple leaves or compound and pedately lobed leaves. As it turns out, in part for that very reason, *C. lalajuela* is quite different from all the other ca. 30 recognized species of the genus, i.e., by virtue of its strictly trifoliolate leaves with subentire leaflets (all leaflets inconspicuously toothed and unlobed), as well as by its conspicuous glands at the base of the leaflets, and its smooth fruits. The glands at the base of the leaflets alone would seem sufficient to distinguish the new species from all others in the genus; in the most recent revison of the genus, it was stated that such glands "are often found at the base of the simple leaves..., but are never found on the leaves of the compound-leaved species" (Jones, 1969: 3). More recently, Lira (1995: 205, clave de identificación, lead 1a), in a treatment of the 23 species known to him, promulgated the same idea. Finally, neither of the two compound-leaved species described after or not in time for Lira's study (*C. heiseri* C. E. Jones & Kearns and *C. jonesii* McVaugh) is said to have laminar glands (Jones & Kearns, 1994; McVaugh, 2001). Nevertheless, most Costa Rican material of the compound-leaved *C. multifoliola* Cogniaux (including *Tonduz 10904* [CR, US], annotated by Jones) has conspicuous glands at the base of the leaflets of its compound (3- to 5-foliolate) leaves. Apart from the similar laminar glands, *C. lalajuela* bears little resemblance to *C. multifoliola*, the latter having leaflets that are strongly toothed and (the lateral ones) pedately lobed, echinate fruits, and a sessile staminal disk. The cultivated *C. pedata* (L.) Schrader is apparently the only other compound-leaved *Cyclanthera* that often has more or less unarmed (though much larger) fruits, but its leaves are at least

5-foliolate, the leaflets are strongly toothed and lack both petiolules and laminar glands, and the lateral leaflets are deeply and pedately lobed. We know of only one other *Cyclanthera* species, *C. eichleri* Cogniaux, reported to have unarmed fruits. That species, known only from the type, from the province of Rio de Janeiro, Brazil, has simple (obscurely 3- to 5-lobed) leaves, apparently without glands.

Following Jones (1969) and Lira (1995), *Cyclanthera lalajuela*, by virtue of its trifoliolate leaves, stalked androecial column, and fruit peduncle shorter than the leaf petioles, would key out in the vicinity of *C. dissecta* (Torrey & A. Gray) Arnott and *C. rostrata* (Paul G. Wilson) Kearns & C. E. Jones (as "C. parviflora"), both with armed and smaller (0.3–3 vs. ca. 5 cm) fruits and leaves that lack glands.

Unarmed fruits are unusual in *Cyclanthera*. The only well-known species that frequently lacks spines is *C. pedata*; the occurrence of spines in that species is variable, and its wild relatives have spiny fruits (M. Nee, pers. comm.). Unarmed fruits in *C. pedata* are surely a result of human selection; the species is cultivated in Central and South America for its large, virtually hollow, edible fruits (common names in Costa Rica: caiba, caífa, jaiba), which are used mostly, like bell peppers, to be filled and baked. We have seen only one fruit (close to mature?) of *C. lalajuela* and several pistillate flowers and very young fruits, but in no case do we find any evidence of spines or protuberances. Even if future collections should prove that this new species can indeed have armed fruits, its strictly trifoliolate leaves with subentire leaflets and conspicuous glands would still distinguish it from all other species in the genus.

The two specimens cited here with very small, juvenile leaves are suspected of belonging to this species because of their locality and certain aspects of their leaf morphology. Somewhat unexpectedly, however, their simple to trifoliolate leaves are profusely lobulate (see Fig. 1A).

Paratypes. COSTA RICA. **Alajuela:** Cantón de San Carlos, P.N. Volcán Arenal, Cerro Chato, sendero que lleva a la Laguna, 22 Aug. 2000 (fl.), *A. Rodríguez, V. Ramírez & G. Soto 6268* (INB); entre La Tigra y Nuevo Arenal, entrando por Linda Vista y Venado, 25 Apr. 2007 (fl.), *D. Santamaría, C. Persson & A. Antonelli 3267* (CR, INB, MO); Cantón de San Ramón, entre La Balsa et Cataratas a San Ramón, 12 Oct. 1925 (juv.), *Brenes 307* [Hb. Brenes 4522] (F852636); Cataratas de San Ramón, 21 Feb. 1931 (fl.), *Brenes 3028 (61)* [13744 (Hb. Brenes)] (CR), *Brenes s.n.* [13450 Hb. Brenes] (F857204); Monteverde, Río Peñas Blancas, 13 Jan. 1988 (fl., fr.), *W. Haber 8071* (CR, MO); Monteverde, San Gerardo Biol. Station, 26 July 1995 (fl.), *Darin Pennys 631* (INB, MO); Cantón de Tilarán, Reserva Forestal de Arenal, Quebrada San Gerardo, Río Caño Negro, Finca de Enrique Quesada y Ceferino González, 19 Feb. 1990 (fl.), *Erick Bello 1929* (INB, MO); Cantón de Zarcero, 9 Jan. 1938 (juv.), *Austin Smith H60* (F).

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